respectfully submits that the thermal energy source is depicted as item 16 in FIGUREs 1-5. The description of this filament is a thermal energy source is further found in the specification, wherein "filament 16 of coated light bulb 10 is additionally a heat source, elevating the temperature of rare earth thin film 12." (Page 19, Lines 24-25)

Additionally, the applicant submits Figure 1B which clearly depicts heat-generating element 17 as a "a thermal energy source" as claimed in Claim 30. applicant further submits that no new matter is introduced by this amendment as the depiction of a thermal source as a separate element from the light is disclosed in the specification on page 19, lines 24-25. The description of the heat source as a incandescent bulbs, resistive wires, exothermic chemical reactions, ultrasonic radiation, acoustic radiation, microwave radiation, laser radiation or other such heat-generating elements as known to those skilled in the art is also found in the original specification on page 38 lines 1-5.

Therefore the applicant respectfully requests that the examiner's objection to the depiction of a thermal energy source in the drawings be withdrawn.

Received from < 203 797 2544 > at 1/10/02 3:32:10 PM [Eastern Standard Time]

The applicant respectfully submits that it does not teach the use of a separate thermal source as is claimed in Independent Claim 30. As the examiner had previously stated this is a patentably distinct difference and the applicant requests that these rejections be withdrawn.

Claims 34, 37-39, 41-43 and 45 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al in view of Griessen et al (Journal of alloys and Compounds, vol. 153-154 (1997)).

The examiner has stated that Ito et al does not teach the use of two separate sources (light source and thermal energy source); and has indicated allowability for this reason previously.

Thus, it is inappropriate to combine Ito and Griessen. Therefore, the applicant request these rejections be withdrawn.

CONCLUSION

In view of all the foregoing, claims 30-32 and 35-45 herein are in form and condition for allowance. Issue of a Notice of Allowance therefore is respectfully requested.

Received from < 203 797 2544 > at 1/10/02 3:32:10 PM [Eastern Standard Time]

The Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 50-0860 of Advanced Technology Materials, Inc.

Respectfully submitted,

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APPENDIX A

Version with Markings to Show Chang s Made to Paragraphs within the Specification

1. On page 6, replace the paragraph beginning at line 12 with the following:

~~Fig. 1A is a schematic representation of the present invention~~ according to one embodiment, in the ~~absence~~ of hydrogen gas. Fig. 1B is 1 is a schematic representation of the present invention according to a second embodiment, in the absence of ~~hydrogen gas~~.

2. On Page 18, replace the paragraph beginning on line 23 with the following:

Referring to Figs. 1A and 1B, light bulb 10 comprising incandescent filament 16 has deposited thereon a rare earth metal thin film layer 12, preferably comprising a trivalent rare earth metal such as yttrium, that is reversibly reactive with hydrogen to form both metal dihydride and metal trhydride reaction products. Over the rate earth metal thin film layer 12 is deposited a protective layer 14, comprising a suitable material, such as for example Pd, Pt, Ir, Ag, Au, Ni, Co, or alloys thereof, and most preferably comprising palladium. In the basence of hydrogen in the ambient environment to which the

Received from < 203 797 2544 > at 1/10/02 3:32:10 PM [Eastern Standard Time]

bulb is exposed, the rate earth metal thin film 12 is in a metallic, optically reflective dihydride state. Light from filament 16 is attenuated by the dihydride state of rare earth metal thin film layer 12 and thus only a portion of it reaches photo-detector 18.

3. On page 19, replace the paragraph beginning on line 24 with the following:

In Figure 1A, filament 16 of coated light bulb 10 is additionally a heat source, elevating the temperature of rare earth thin film 12. In Figure 1B, heat-generating element 17 is depicted as a resistive element. However, heart-generating element 17 may comprise incandescent bulbs, resistive wires, exothermic chemical reactions, ultrasonic radiation, acoustic radiation, microwave radiation, laser radiation or other such heat-generating elements as known to those skilled in the art. The transition of rare earth thin film 12 from reflective dihydride to transparent trihydride state and back, in response to the absence or presence, respectively, of hydrogen occurs much more rapidly at elevated temperatures. This reduces both the response time of the detector in the presence of hydrogen and its recovery to the opaque "null state" in the absence of hydrogen.

Received from < 203 797 2544 > at 1/10/02 3:32:10 PM [Eastern Standard Time]

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